where they were quite common and frequented chiefly the sandy banks and dry reed-fences around the gardens. They are probably to be found all along the south coast of the Caspian, for although none was obtained during the journey along the coast from Resht to Asterabad Bay, this may be accounted for by the fact that it was then early in the year, February and March, and too cold. But I once or twice caught a glimpse of a lizard, among the scrub on the dry sand-dunes near the shore, which I feel sure now must have been this species. None was obtained on the smaller western peninsula, but I should not like to say they are not to be found there, for they probably are, and I expect the species exists all along the south coast of the Caspian Sea where it is dry and sandy."

EXPLANATION OF PLATE LXVII.

Lacerta chlorogaster, male, natural size, and enlarged views of upper surface of head and anal region.

3. Remarks on some Wart-Hog Skulls in the British Museum. By Dr. Einar Lönnberg, C.M.Z.S. &c.

[Received October 19, 1908.]

When recently describing the mammals collected in German East Africa by Prof. Dr. Y. Sjöstedt * I made some remarks about different races of Wart-Hogs, and, with some hesitation, I expressed the opinion that "for the present at least" five such races must be "discerned and distinguished by names." Since then I have had the opportunity, thanks to the kindness of Mr. Oldfield Thomas, of studying the material of Wart-Hogs in the British Museum (Nat. Hist.), and, thanks to the kindness of Dr. S. F. Harmer, that in the University Museum of Cambridge. It was quite easy to recognize among this material the five races mentioned in the paper quoted above, in such cases where they were represented by skulls of adult specimens, especially boars.

A few remarks about these skulls may be of some value for future study of these animals, as I did not have access to specimens of all five races when writing the first paper.

Phacochœrus africanus (Gmelin) appears to be the largest or one of the largest of these races. A skull of an adult boar of this kind in the British Museum from the typical locality, Cape Verde, measures 440 mm. in length, but the extreme tips of the nasals are not complete, so that this measurement should be a little longer. The postorbital portion of this skull is very long, measuring 59 mm., but it is at the same time very broad, viz. 58 mm. across the flat area. By this characteristic *Ph. africanus* is very easily distinguished from *Ph. œliani*, which also has a long but at the same time

* Lönnberg: Mammals, in Wiss. Ergebn. d. schwed. zool. Exp. nach dem Kilimandjaro, dem Meru etc., 1905–1906, unter Leitung von Prof. Dr. Yngve Sjöstedt.

very narrow postorbital portion of the skull. This is proved by the following measurements obtained from specimen No. 69.10.24.47 in the British Museum, ♂ ad. from Zorilla, Abyssinia. The length of this skull from the tip of the nasals to the occipital crest is 388 mm. The postorbital portion has a length of 60 mm., but the breadth of its flat area is only 24½ mm. These differences in the dimensions of the postorbital portion of the skull become still more striking if they are expressed in percentages of the length of the skull. In such a case the length of the postorbital portion of the skull of *Ph. africanus* will be found to be 13·4 % and the width of its flat area almost the same, or 13·1 % of the length of the skull. The same percentages for *Ph. œliani* are respectively 15·4 % and 6·3 %. *Ph. africanus* has a comparatively narrow interorbital space, which corresponds to only 30 %* of the length of the skull. In *Ph. œliani* the interorbital region is a little broader, so that it corresponds to 31·7 % of the length of the skull. The combined characteristics of the postorbital and interorbital portions of the skulls of these two races give the impression that they are comparatively longer than those of other races. The skulls of these races are therefore at once distinguished from others. *Ph. massaicus* has a comparatively long postorbital region, viz. about 14 % of the length of the skull, but as it is very broad at the same time, its flat area measuring about 14·5 %, and the interorbital region as well is very broad, being 38·8 % of the length of the skull, no confusion with other races is possible. *Ph. sundevallii* has a somewhat shorter postorbital region, viz. 13·7 %, and the flat area of the same is considerably narrower, viz. 11 %: at the same time its interorbital region is much narrower than in *Ph. massaicus*, so that the percentage expressing its relation to the length of the skull, 32·3, resembles that of *Ph. œliani*. In such a way these four races may be easily distinguished from each other, if the material is derived from adult males.

Two Wart-Hog skulls in the British Museum from Angoniland (No. 8.2.14,1, ♂ ad., and 8.2.14,2, ♂ jun.) show some affinity to *sundevallii*. Their interorbital width is respectively 33·4 % and 32·1 % of the length of the skull (thus rather similar in this respect to *Ph. sundevallii*), but the postorbital portion is smaller than in *Ph. sundevallii*, its length being about 11·7 % and the width of its flat area 10·1 % of the length of the skull in the adult. In the younger specimen the last-mentioned dimension is still smaller (8·1 %), as always is the case with the young ones, and cannot be considered. More material is needed before anything can be decided about this Wart-Hog. It may, however, be added that its choanæ are rather wider, 36 mm. in the adult, than in the typical *Ph. sundevallii*, 29 mm.

Two other skulls of Wart-Hogs in the British Museum one from Ukanga, Lake Nyassa (No. 91.5.9,3, ♂ ad.) and

* The interorbital measurements are always counted at the middle of the orbit.

another from Lake Mweru (No. 94.3.8,17, ♂ ad.), are quite similar *inter se*. Their interorbital width is respectively 28·8 °/₀ and 29·3 °/₀, the length of their postorbital portion 12 °/₀ and 12·3 °/₀, and the length of the postorbital flat area 11·1 °/₀ and 11·4 °/₀ of the length of the skull. A third skull from Lake Mweru (No. 94.3.8,18, ♂ jun.) is also similar with regard to the first two dimensions, viz. 30 °/₀ and 12 °/₀, but the postorbital flat area is narrow, 8·7 °/₀, in consequence of its youth. It appears from this as if the Wart-Hogs of the country between Lake Nyassa and Lake Mweru agreed in having a comparatively very narrow interorbital region, narrower than in *Ph. sundevallii*. The width of the flat postorbital portion is similar to that of *Ph. sundevallii*, but the length of the same is somewhat shorter.

With regard to other measurements, it seems as if the skulls from Angoniland, Nyassa, and Lake Mweru had a somewhat longer preorbital portion (distance from tip of nasals to anterior orbital margin) than both *Ph. sundevallii* and *Ph. massaicus*.

Comparative studies of more material of fully adult animals may thus in the future prove that the Wart-Hogs inhabiting the countries adjoining Lake Nyassa and Lake Mweru are racially different both from *sundevallii*, inhabiting Natal and probably Transvaal and the southern parts of Portuguese East Africa, and from *Ph. massaicus*, inhabiting the Masai country in German East Africa.

How widely *Ph. massaicus* is distributed cannot be stated for the present. The skull of a young Wart-Hog of male sex from Uganda in the British Museum (No. 95.4.3.42) agrees so far with *Ph. massaicus* in having a very broad interorbital region, which corresponds to 37 °/₀ of the length of the skull. But, on the other hand, the postorbital portion is rather small, its length being only 11 °/₀ and the width of its flat area only 10·5 °/₀ of the length of the skull. If this smallness be not due to the youth of the specimen, there must exist a separate race of Wart-Hog in Uganda which should be easily recognized by the two combined characteristics: great interorbital width and shortness of the postorbital region.

In the specimen examined the length of the postorbital region exceeds the width of its flat area by 2 millimetres only, but, as experience proves that the latter dimension increases more with age than the former, it is probable that in adult Wart-Hog boars from Uganda the width of the postorbital flat area is greater than the length of the same portion of the skull (as also is the case in *Ph. massaicus*).

In the collections of the British Museum are two Wart-Hog skulls, numbered 0.3.27.16 and 0.3.27.17, which aroused the interest of the present writer more than all the others. Both these, which were presented by Lord Delamere, have no traces of upper incisors, and 0.3.27.16 has no incisors in the lower jaw either, with the exception of two small pea-shaped rudiments lying in corresponding grooves of the jaw-bone; these

rudiments appeared to represent the median pair. Specimen 0.3.25.17, on the other hand, is provided with four well-developed incisors in the lower jaw. The lower incisors are thus subject to great variation, but the upper ones appear to be constantly missing, as the premaxillary is too thin to carry any teeth, just as in *Ph. œthiopicus*. The two skulls in question resemble the Cape Wart-Hog (*Ph. œthiopicus*) in other respects, too, both in general shape and with regard to particular features, as will be seen from the following comparison. The postorbital portion of the skull is very short in *Ph. œthiopicus*, about 10·3 % of the length of the skull in a specimen in the Royal Natural History Museum of Stockholm (brought home by Sparrman), 10·5 % in specimen 0.3.27.17 and 10·9 % in specimen 0.3.27.16 in the British Museum. The width of the postorbital flat area is greater than the length of this portion, viz. 13·3 % in Sparrman's specimen, which is the oldest, and respectively 11·9 % and 11·5 % in Lord Delamere's two specimens. The interorbital width is rather greater in Sparrman's specimens, viz. 36·5 %, than in the two others, respectively 33·0 % and 34·7 %. There was no locality indicated on the labels of Lord Delamere's two Wart-Hog skulls, and I believed, therefore, judging from their resemblance to *Ph. œthiopicus*, that they originated from the Cape. Mr. Oldfield Thomas, however, kindly informed me that this was not the case, as Lord Delamere had travelled in North-eastern Africa, Somaliland, and British East Africa, and the skulls were most probably from Somaliland. This made the matter more complicated, but at the same time more interesting, as it was not probable that the same race of Wart-Hog inhabited two countries so far apart when the intervening countries were occupied by widely different races. A renewed examination revealed also that Lord Delamere's Wart-Hogs differed in some respects from *Ph. œthiopicus*, although the general shape of the skull (especially the postorbital portion) was similar. The nasals of *Ph. œthiopicus* are "anteriorly rather evenly convex, but form in their posterior portion behind the foramina infraorbitalia a roof-like ridge or elevation"*. In Lord Delamere's Wart-Hogs the nasals are rather flat along their whole extent, without forming any ridge posteriorly. The choanæ are broad, much widened posteriorly in Lord Delamere's Wart-Hogs, but in *Ph. œthiopicus* they are not wider behind than in front and the margins are parallel. The sphenoidal pits are completely open, not covered by any bony roof, in Lord Delamere's Wart-Hogs, but the lateral walls formed by the pterygoids are high so that a deep canal is formed. The distance from the hind margin of *foramina palatina* to the hind margin of the palate measured in a straight line is respectively 50 and 51 mm. in the two specimens of Lord Delamere's Wart-Hogs, but only 35 mm. in *Ph. œthiopicus*, although the latter specimen is older and a little larger. As these differences are quite recognizable and more material, no doubt, on direct comparison, will add other characteristics osteological

* Lönnberg, *l. c.* p. 55.

as well as external, I think it will be correct to distinguish this Wart-Hog, presumably from Somaliland, by a separate name, and I venture to propose to call it *Phacochœrus delamerei*.

I hope that sportsmen who visit Somaliland may have their attention drawn to this animal and bring home satisfactory material to fully elucidate this question.

As the Eurasian members of Suidæ are less specialized than the African genera of the same family, it must be assumed that the hogs originated on the Eurasian continent, the more so as the oldest known fossil remains belonging to this family have been found in Europe. The genera of Suidæ less specialized than the Wart-Hog, even *Potamochœrus* and *Hylochœrus*, have the postorbital portion of the skull comparatively much longer and the interorbital region much narrower than the corresponding parts of *Phacochœrus*. Thus a comparatively long postorbital and a narrow interorbital region of the skull in a Wart-Hog indicate a less specialized race. It agrees well both with the geographical distribution and origin that the most northern races of *Phacochœrus*, viz. *Ph. œliani* in Abyssinia and *Ph. africanus* in Senegambia, are the least specialized. *Ph. massaicus* further south has retained a rather long postorbital region of the skull, but acquired a great interorbital breadth. The Wart-Hogs from Lake Mweru and Nyassa, on the other hand, have still a narrow forehead, but their postorbital portion is somewhat shortened, while *Ph. sundevallii* has the forehead broader but the postorbital portion not so much shortened. Finally, in the Cape region, the most specialized of all Wart-Hogs, *Ph. æthiopicus*, with very short postorbital portion and a comparatively broad forehead, is found. It has also completely lost the upper incisors, while the lower ones are absent or rudimentary. *Ph. delamerei*, which at present must be regarded as inhabiting Somaliland, has in that country independently reached a similar stage of specialization as *Ph. æthiopicus* at the Cape. It is probable that this analogy between the Wart-Hogs of the Cape and Somaliland depends upon similar natural conditions of the two countries, and if that be so there might no doubt be found other instances of parallel development within the same geographical areas.

4. On Two Chinese Serow-Skulls.

By R. Lydekker.

[Received October 3, 1908.]

(Text-figures 191–192.)

When I described the immature specimen of the White-maned Serow (*Nemorhœdus argyrochætes*) of Sze-chuen in the Society's 'Proceedings' for 1905, vol. ii. p. 329, pl. viii., some doubt was expressed at the meeting as to whether the animal was anything more than a local race of the widespread *Nemorhœdus sumatrensis*;